(FORM PTO-1390 (Modified) (REV 11-2000)) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR
112740-526	10/069276

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/DE00/01125	12 April 2000	27 August 1999

TITLE OF INVENTION
PORTABLE TELEPHONE

APPLICANT(S) FOR DO/EO/US
Klaus Goebel et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☒ is attached hereto (required only if not communicated by the International Bureau)
   b. ☐ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☒ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☒ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☐ Other items or information:

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/069276	PCT/DE00/01125	112740-526

24. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	**$1040.00**
☒	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	**$890.00**
☐	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	**$740.00**
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)	**$710.00**
☐	International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)	**$100.00**
	ENTER APPROPRIATE BASIC FEE AMOUNT =	**$890.00**
	Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	**$0.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	10 - 20 =	0	x $18.00	**$0.00**
Independent claims	1 - 3 =	0	x $84.00	**$0.00**
Multiple Dependent Claims **(check if applicable)**.			☐	**$0.00**
	TOTAL OF ABOVE CALCULATIONS =			**$890.00**
☐	Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.			**$0.00**
	SUBTOTAL =			**$890.00**
	Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +			**$0.00**
	TOTAL NATIONAL FEE =			**$890.00**
☐	Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).**			**$0.00**
	TOTAL FEES ENCLOSED =			**$890.00**
			Amount to be: refunded	$
			charged	$

a. ☒ A check in the amount of **$890.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-1818** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

William E. Vaughan (Reg. No. 39,056)
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312-807-4292

SIGNATURE

William E. Vaughan
NAME

39,056
REGISTRATION NUMBER

February 25, 2002
DATE

BOX PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY-CHAPTER II

PRELIMINARY AMENDMENT

APPLICANTS:	Klaus Goebel et al.	DOCKET NO.:	112740-526
SERIAL NO:		GROUP ART UNIT:	
FILED:		EXAMINER:	
INTERNATIONAL APPLICATION NO::		PCT/DE00/01125	
INTERNATIONAL FILING DATE		12 April 2000	
INVENTION:	PORTABLE TELEPHONE		

Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:

Please amend the above-identified International Application before entry into the National stage before the U.S. Patent and Trademark Office under 35 U.S.C. § 371 as follows:

In the Specification:

Please replace the Specification of the present application, including the Abstract, with the following Substitute Specification:

SPECIFICATION

TITLE OF THE INVENTION

PORTABLE TELEPHONE

BACKGROUND OF THE INVENTION

For inputting call numbers and for controlling specific additional functions, a telephone usually has a numerical keypad with a small number of supplementary keys. Convenient fixed-network telephones are often also equipped with a larger

number of supplementary keys for controlling added-feature functions. In the case of portable telephones, the provision of a large number of input keys is impossible precisely because of the aimed-at minimization of the volume. As such, it is known to perform alphanumeric inputting and to implement a wide variety of functions by multiple assignment of the numerical keys and menu prompting controlled by a small number of supplementary keys.

Touch-sensitive displays, what are referred to as touch screens, in which the user makes an input by applying point pressure to the surface which serves simultaneously as a display field and input field, have also been known for a long time. In higher quality designs, such touch screens permit inputs to be made by handwriting. They have come to be a widespread display and input device for relatively complex hand-held electronic devices, for example for organizers, PDAs or hand-held PCs.

Touch screens are costly and mechanically sensitive components which require mechanical protection in the unused state; particularly in view of their high cost which makes up a considerable portion of the price of organizers or PDAs, etc. This protective function is usually performed by covers which are slid or folded over the touch screen. These covers generally prevent the touch screen, and thus the device, from being used in the protected state. In another widespread design, organizers or hand-held PCs include two part housings, one of which is fitted with an input keypad on its surface and the other with a display. In the closed state, the display and input keypad are situated one over the other, protected in the interior of the closed housing.

The development of the mobile telephone sector into a mass market has also seen the development of combination devices which advantageously combine the functions of a mobile telephone and those of an organizer or PDA. Such combination devices are usually composed of two part housings which are connected to one another in a foldable fashion via a hinge. Such devices, which can be referred to as multi-function mobile telephones, are designed in one embodiment as a folding housing of the type of the above-mentioned organizers or PDA with a conventional input keypad and conventional LCD display. In a further

known embodiment, such mobile telephones have a touch screen onto which a telephone keypad is folded in the function as a mobile telephone, while this keypad is folded away in the organizer function and exposes the entire touch screen. This enables the entire organizer or PDA functionality to be used. In telephone mode, the cover also exposes part of the touch screen, providing a reduced display for operating the telephone. In this case, a different display mode from that of the organizer function ("portrait" representation instead of "landscape" representation) is, of course, selected.

The known portable telephones of this type are still extremely bulky, which is due, inter alia, to the fact that an appropriate and convenient organizer function requires a certain size of the touch screen, and there is still the necessity to accommodate further, in some cases relatively large, input elements and output elements on the surface of the device.

The present invention is, therefore, directed toward an improved portable telephone which constitutes the implementation of a relatively large touch screen with minimal housing dimensions.

SUMMARY OF THE INVENTION

The present invention includes the essential idea of reserving that surface of the device which holds the touch screen as far as possible solely for the touch screen and of refraining from accommodating any other functional components on the surface. This permits the housing to be shortened.

In one preferred embodiment of the present invention, the customary user behavior is appealed to, in particular, by the fact that the input parts for the telephone mode are embodied as a conventional mobile phone keypad. In a first embodiment of such a keypad, the keys on the reverse side, facing the touch screen, of the second part of the housing which is fitted with the keypad each have a pressure pin. A suitable embodiment, known per se, of the keys with what are referred to as "snap-action disks" or similar parts can, in addition to the familiar external appearance of a mobile phone keypad, also provide comparable activation feedback. In another embodiment, the input keypad is an independent mobile phone keypad which is completely separate from the touch screen. This keypad

can be designed in the way which is customary with mobile telephones or, in order to make the overall size as small as possible, can be provided with a film keypad or similarly flat keypad.

In an alternative embodiment of the present invention, which is even easier and more cost-effective to implement, the input parts are formed by recesses in the second part of the housing (which has essentially only the function of a cover here) in conjunction with input fields represented on the touch screen. A keypad is, as it were, "simulated" by the interaction of recesses and touch screen input fields. The advantage of great simplicity is, however, compromised in this embodiment by certain ergonomic disadvantages.

In a preferred mechanical embodiment, which is known per se, the two parts of the housing are connected to one another by a hinge and can be pivoted with respect to one another. The second part of the housing essentially entirely exposes the touch screen in a first pivoted position, and essentially completely covers it in a second pivoted position (in which the telephone mode is implemented).

In an alternative embodiment to the above, the two parts of the housing are connected to one another in a displaceable fashion via respective guides. Here, the touch screen is entirely exposed in a first position, the organizer/PDA operating position, and covered in a second position, the telephone operating position.

In both embodiments, the second part of the housing has a window through which the part of the touch screen which is essential for a telephone mode can be viewed, but which, together with the other regions of the second part of the housing, covers the entire surface of the sensitive touch screen and protects it against damage. In one particularly simple embodiment, this window can, however, be omitted and a simple housing cutout provided in its place.

The proposed device advantageously has an input function change-over switch which is actuated when the two parts of the housing move relative to one another and brings about a change-over between a touch screen input mode (organizer/PDA mode) and a keypad input mode (telephone mode), part of the touch screen being switched in a special way as a telephone display in the latter mode.

In one appropriate embodiment of the housing shells, a recess for holding an input pin for activating the touch screen is advantageously provided on its side, where the pin is always to hand, preferably attached in a captive fashion.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows an oblique view of a mobile telephone according to an embodiment of the present invention with a closed housing.

Figure 2 shows an oblique view of the mobile telephone shown in Figure 1 with the housing opened and the touch screen exposed.

DETAILED DESCRIPTION OF THE INVENTION

Figures 1 and 2 show a perspective view of a mobile telephone 1 with the supplementary functionality of a palmtop. The mobile telephone 1 includes a first housing part 3 and a second housing part 5, which are connected to one another in a pivotable fashion via a two-part folding hinge 7a, 7b on one longitudinal side.

A touch screen 9 which occupies virtually the entire surface is provided on the upper side of the first housing part 3 as an input and display device of the mobile telephone in the palmtop operating mode. In one side face 3a of the first housing part 3, a recess 11 for a ballpoint pen 13, which serves as an input pin for the touch screen 9, is provided. Furthermore, the first housing part is fitted with an antenna 15 and has a connecting bushing 17 for a data line. A microphone (a telephone transmitter) 19 is positioned on the lower end face 3b of the first housing part 3.

The upper side of the second housing part can be seen in Figure 1 and its lower side (in the folded-open state of the mobile telephone 1) can be seen in Figure 2. In Figure 1, it is apparent that a telephone receiver 21 and an input keypad 23 for implementing the telephone functions are accommodated in the second housing part 5. A display window 25 is provided between the telephone receiver 21 and the input keypad 23 (in the arrangement which is customary per se in mobile telephones), the display window 25 exposing a section 9a of the touch screen 9 to the user's view even when a housing of the mobile telephone 1 is closed. The input keypad 23 is, as

is apparent from Figure 2, embodied on its underside facing the surface of the touch screen 9 as a mechanical key array 23' via which pressure is exerted on a specific region of the touch screen 9 when a key is actuated, and a numerical input or a function in the telephone mode is triggered. For this purpose, for example a blunt plastic or hard-rubber pressure pin 23.1 can be connected to each key and the key can be prestressed in an upward direction by a spring element.

In the closed state of the mobile telephone 1, the touch screen 9 is actuated in the telephone mode in such a way that the configuration of the pressure pin array 23' of the input keypad 23 is assigned an input mask using the mobile telephone MMI (Man-Machine Interface) of a conventional mobile telephone.

In the opened state shown in Figure 2, a PC user interface is activated, wherein a respective start menu is firstly called when the cover is opened. In order to change over between the operating modes, a change-over switch 27 which is embodied as a key button is provided on the underside of the second housing part 5, which key button can, of course, be used to change over the display and the input mode of the touch screen at the same time as the change-over of the mode of operation. In order to connect the telephone receiver 21 and the change-over switch 27 to the printed circuit board of the mobile telephone, a line which runs within the folding hinge 7b and which leads out of the second part 5 of the housing into the first part 3 of the housing is provided.

The present invention is not restricted to the exemplary embodiment described, but rather is also possible in a multiplicity of refinements within the scope of activity by a person skilled in the art. In particular, refinements in terms of the specific arrangement of the telephone transmitter and telephone receiver are possible, the arrangement of the relatively bulky telephone receiver in the second housing part covering a section of the touch screen constituting an essential feature of the present invention. It permits, in particular, the telephone housing to be shortened, corresponding to an important desire on the part of customers.

A recess for an input pin also can be provided at another location; for example, in the base region of the first housing part or else on the second housing part. However, it also can be dispensed with.

Instead of the mobile telephone described above, a cordless telephone with expanded functionality also may be embodied in the way explained in order to provide a display and input screen which is as large as possible in area for the supplementary function (database, pocket translator, organizer or the like) with minimum housing dimensions.

Indeed, although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

ABSTRACT OF THE DISCLOSURE

A portable telephone, in particular a mobile telephone or a cordless telephone, having a display and input device which is arranged on a surface of a first part of the housing and is embodied as a touch screen, and a second part of the housing which essentially covers the touch screen in a first operating position and essentially exposes it in a second operating position, and which has additional input parts, the second part of the housing accommodating a telephone receiver in such a way that the receiver is situated over the touch screen in the first operating position.

In the Claims:

On page 6, cancel line 1 and substitute the following left hand justified heading therefore:

CLAIMS

Please cancel Claims 1-10, without prejudice, and substitute the following claims therefore:

11. A portable telephone, being one of a mobile telephone and a cordless telephone, comprising:

a first part of a housing of the portable telephone;

a display and input device arranged on a surface of the first part of the housing, the display and input device configured as a touch screen;

a second part of the housing which substantially covers the touch screen in a first operating position of the portable telephone and which substantially exposes the touch screen in a second operating position of the portable telephone, the second part of the housing accommodating a telephone receiver such that the receiver is situated over the touch screen in the first operating position; and

additional input parts.

12. A portable telephone as claimed in Claim 11, wherein the touch screen occupies substantially an entire surface of the first part of the housing.

13. A portable telephone as claimed in Claim 11, wherein the additional input parts are formed as a mechanical keypad, such that a pressure pin via which point pressure is exerted on a predetermined region of the touch screen is respectfully assigned to each key of the keypad on a reverse side facing the touch screen.

14. A portable telephone as claimed in Claim 11, wherein the additional input parts are formed by recesses in the second part of the housing in conjunction

with input fields which are represented on the touch screen and which together form an input mask for the touch screen in a predetermined telephone input mode.

15. A portable telephone as claimed in Claim 11, wherein the additional input parts are formed as an input keypad which is independent of the touch screen.

16. A portable telephone as claimed in Claim 11, wherein the second part of the housing is displaceable with respect to the first part of the housing, such that the second part of the housing substantially exposes the touch screen in a first displaced position and substantially covers the touch screen in a second displaced position.

17. A portable telephone as claimed in Claim 11, wherein the second part of the housing is pivotable with respect to the first part of the housing, such that the second part of the housing substantially exposes the touch screen in a first pivoted position and substantially covers the touch screen in a second pivoted position.

18. A portable telephone as claimed in Claim 11, wherein the second part of the housing includes a transparent window region which covers a section of the touch screen in the first operating position.

19. A portable telephone as claimed in Claim 11, further comprising a change-over switch which is actuated upon displacement of the second part of the housing with respect to the first part of the housing, wherein the actuation of the change-over switch effects a change-over between a touch screen input mode and an additional input parts input mode as well as a change-over of display functions.

20. A portable telephone as claimed in Claim 11, wherein a recess is formed in a side face of one of the first and second parts of the housing, the recess being for holding an input pin.

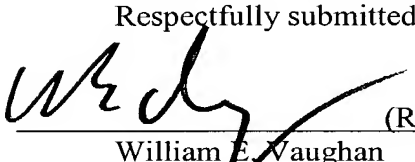
REMARKS

The present amendment makes editorial changes and corrects typographical errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby. Attached hereto is a marked-up version of the changes made to the specification by the present amendment. The attached page is captioned "**Version With Markings To Show Changes Made**".

In addition, the present amendment cancels original claims 1-10 in favor of new claims 11-20. Claims 11-20 have been presented solely because the revisions by red-lining and underlining which would have been necessary in claims 1-10 in order to present those claims in accordance with preferred United States Patent Practice would have been too extensive, and thus would have been too burdensome. The present amendment is intended for clarification purposes only and not for substantial reasons related to patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the cancellation of claims 1-10 does not constitute an intent on the part of the Applicants to surrender any of the subject matter of claims 1-10.

Early consideration on the merits is respectfully requested.

Respectfully submitted,



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Attorneys for Applicants

Version With Markings To Show Changes Made

~~Description~~ S P E C I F I C A T I O N

~~Portable telephone~~

TITLE OF THE INVENTION

"PORTABLE TELEPHONE"

BACKGROUND OF THE INVENTION

~~**The invention relates to a portable telephone according to the preamble of claim 1.**~~

For inputting call numbers and for controlling specific additional functions, a telephone usually has a numerical keypad with a small number of supplementary keys. Convenient fixed-network telephones are often also equipped with a larger number of supplementary keys for controlling added-feature functions. In the case of portable telephones, the provision of a large number of input keys is impossible precisely because of the aimed-at minimization of the volume ~~so that in such telephones~~. As such, it is known to perform alphanumeric inputting and to implement a wide variety of functions by multiple assignment of the numerical keys and menu prompting controlled by a small number of supplementary keys.

Touch-sensitive displays, what are referred to as touch screens, in which the user makes an input by applying point pressure to the surface which serves simultaneously as a display field and input field, have also been known for a long time. In higher quality designs, such touch screens permit inputs to be made by handwriting. They have come to be a widespread display and input device for relatively complex hand-held electronic devices, for example for organizers, PDAs or hand-held PCs.

Touch screens are costly and mechanically sensitive components which require mechanical protection in the unused state ~~in particular~~; particularly in view of their high cost which makes up a considerable portion of the price of organizers or PDAs, etc. This protective function is usually performed by covers which are slid or folded over the touch screen. These covers generally prevent the touch screen, and thus the device, from being used in the protected state. In another widespread design, organizers or hand-held PCs ~~comprise~~ include two part

housings, one of which is fitted with an input keypad on its surface and the other with a display~~, and in~~. In the closed state, the display and input keypad are situated one over the other, protected in the interior of the closed housing.

The development of the mobile telephone sector into a mass market has also seen the development of combination devices which advantageously combine the functions of a mobile telephone and those of an organizer or PDA. Such combination devices are usually composed of two part housings which are connected to one another in a foldable fashion ~~by means of~~ via a hinge. Such devices, which can be referred to as multi-function mobile telephones, are designed in one embodiment as a folding housing of the type of the abovementioned organizers or PDA with a conventional input keypad and conventional LCD display. In a further known embodiment, such mobile telephones have a touch screen onto which a telephone keypad is folded in the function as a mobile telephone, while this keypad is folded away in the organizer function and exposes the entire touch screen. This enables the entire organizer or PDA functionality to be used. In telephone mode, the cover also exposes part of the touch screen, providing a reduced display for operating the telephone. In this case, a different display mode from that of the organizer function ("portrait" representation instead of "landscape" representation) is, of course, selected.

The known portable telephones of this type are still extremely bulky, which is due, inter alia, to the fact that an appropriate and convenient organizer function requires a certain size of the touch screen, and ~~in addition it~~ there is still ~~necessary~~ the necessity to accommodate further, in some cases relatively large, input elements and output elements on the surface of the device.

The present invention is, therefore ~~based on the object of disclosing,~~ directed toward an improved portable telephone which constitutes the implementation of a relatively large touch screen with minimal housing dimensions.

~~The object is achieved by means of a portable telephone having the features of claim 1.~~ SUMMARY OF THE INVENTION

The present invention ~~comprises~~ includes the essential idea of reserving that surface of the device which holds the touch screen as far as possible solely for the touch screen and of refraining from accommodating any other functional components on ~~said~~ the surface. This permits the housing to be shortened.

In one preferred embodiment of the present invention, the customary user behavior is appealed to, in particular, by the fact that the input ~~means~~ parts for the telephone mode are embodied as a conventional mobile phone keypad. In a first embodiment of such a keypad, the keys on the reverse side, facing the touch screen, of the second part of the housing which is fitted with the keypad each have a pressure pin. A suitable embodiment, known per se, of the keys with what are referred to as "snap-action disks" or similar ~~means~~ parts can, in addition to the familiar external appearance of a mobile phone keypad, also provide comparable activation feedback. In another embodiment, the input keypad is an independent mobile phone keypad which is completely separate from the touch screen. ~~Said~~ This keypad can be designed in the way which is customary with mobile telephones or, in order to make the overall size as small as possible, ~~it~~ can be provided with a film keypad or similarly flat keypad.

In an alternative embodiment of the present invention, which is even easier and more cost-effective to implement, the input ~~means~~ parts are formed by recesses in the second part of the housing (which has essentially only the function of a cover here) in conjunction with input fields represented on the touch screen. A keypad is, as it were, "simulated" by the interaction of recesses and touch screen input fields. The advantage of great simplicity is, however, compromised in this embodiment by certain ergonomic disadvantages.

In a preferred mechanical embodiment, which is known per se, the two parts of the housing are connected to one another by a hinge and can be pivoted with respect to one another. The second part of the housing essentially entirely exposes the touch screen in a first pivoted position, and essentially completely

covers it in a second pivoted position (in which the telephone mode is implemented).

In an alternative embodiment to the above, the two parts of the housing are connected to one another in a displaceable fashion ~~by means of~~ via respective guides~~, and here also~~. Here, the touch screen is entirely exposed in a first position, the organizer/PDA operating position, and covered in a second position, the telephone operating position.

In both embodiments, the second part of the housing has a window through which the part of the touch screen which is essential for a telephone mode can be viewed, but which, together with the other regions of the second part of the housing, covers the entire surface of the sensitive touch screen and protects it against damage. In one particularly simple embodiment, this window can, however, ~~also~~ be omitted and a simple housing cutout provided in its place.

The proposed device advantageously has an input function change-over switch which is actuated when the two parts of the housing move relative to one another and brings about a change-over between a touch screen input mode (organizer/PDA mode) and a keypad input mode (telephone mode), part of the touch screen being switched in a special way as a telephone display in the latter mode.

In one appropriate embodiment of the housing shells, a recess for holding an input pin for activating the touch screen is advantageously provided on its side, where ~~said~~ the pin is always to hand, preferably attached in a captive fashion.

~~Advantages and expediencies of the invention also emerge from the subclaims and the following description of a preferred exemplary embodiment with reference to the figures, of which:~~ Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows an oblique view of a mobile telephone according to an embodiment of the present invention with a closed housing~~, and~~.

~~figure~~ Figure 2 shows an oblique view of the mobile telephone shown in ~~figure~~ Figure 1 with the housing opened and the touch screen exposed.

DETAILED DESCRIPTION OF THE INVENTION

Figures 1 and 2 show a perspective view of a mobile telephone 1 with the supplementary functionality of a palmtop. The mobile telephone 1 ~~comprises~~ includes a first housing part 3 and a second housing part 5, which are connected to one another in a pivotable fashion ~~by means of~~ via a two-part folding hinge 7a, 7b on one longitudinal side.

A touch screen 9 which occupies virtually the entire surface is provided on the upper side of the first housing part 3 as an input and display device of the mobile telephone in the palmtop operating mode. In one side face 3a of the first housing part 3, a recess 11 for a ballpoint pen 13, which serves as an input pin for the touch screen 9, is provided. Furthermore, the first housing part is fitted with an antenna 15 and has a connecting bushing 17 for a data line. A microphone (a telephone transmitter) 19 is positioned on the lower end face 3b of the first housing part 3.

The upper side of the second housing part can be seen in ~~figure~~ Figure 1 and its lower side -(in the folded-open state of the mobile telephone 1-) can be seen in ~~figure~~ Figure 2. In ~~figure~~ Figure 1, it is apparent that a telephone receiver 21 and an input keypad 23 for implementing the telephone functions are accommodated in the second housing part 5. A display window 25 is provided between the telephone receiver 21 and the input keypad 23 (in the arrangement which is customary per se in mobile telephones), ~~said~~ the display window 25 exposing a section 9a of the touch screen 9 to the user's view even when a housing of the mobile telephone 1 is closed. The input keypad 23 is-, as is apparent from ~~figure~~ Figure 2-, embodied on its underside facing the surface of the touch screen 9 as a mechanical key array 23' ~~by means of~~ via which pressure is exerted on a specific region of the touch screen 9 when a key is actuated, and a numerical input or a function in the telephone mode is triggered. For this purpose, for example a blunt plastic or hard-rubber pressure pin 23.1 can be connected to each key and the key can be prestressed in an upward direction by a spring element.

In the closed state of the mobile telephone 1, the touch screen 9 is actuated in the telephone mode in such a way that the configuration of the pressure pin array 23' of the input keypad 23 is assigned an input mask using the mobile telephone MMI (Man-Machine Interface) of a conventional mobile telephone.

In the opened state shown in ~~figure~~ Figure 2, a PC user interface is activated, wherein a respective start menu ~~being~~ is firstly called when the cover is opened. In order to change over between the operating modes, a change-over switch 27 which is embodied as a key button is provided on the underside of the second housing part 5, which key button can, of course, be used to change over the display and the input mode of the touch screen at the same time as the change-over of the mode of operation. In order to connect the telephone receiver 21 and the change-over switch 27 to the printed circuit board of the mobile telephone, a line which runs within the folding hinge 7b and which leads out of the second part 5 of the housing into the first part 3 of the housing is provided.

The present invention is not restricted to the exemplary embodiment described, but rather is also possible in a multiplicity of refinements within the scope of activity by a person skilled in the art. In particular, refinements in terms of the specific arrangement of the telephone transmitter and telephone receiver are possible, the arrangement of the relatively bulky telephone receiver in the second housing part covering a section of the touch screen constituting an essential feature of the present invention. It permits, in particular, the telephone housing to be shortened, corresponding to an important desire on the part of customers.

A recess for an input pin ~~can~~ also can be provided at another location~~,~~; for example, in the base region of the first housing part or else on the second housing part~~; however,~~. However, it ~~can~~ also can be dispensed with.

Instead of the mobile telephone described above, a cordless telephone with expanded functionality ~~may~~ also may be embodied in the way explained in order to provide a display and input screen which is as large as possible in area for the supplementary function (database, pocket translator, organizer or the like) with minimum housing dimensions.

Indeed, although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.

ABSTRACT OF THE DISCLOSURE

A portable telephone, in particular a mobile telephone ~~(1)~~ or a cordless telephone, having a display and input device which is arranged on a surface of a first part ~~(3)~~ of the housing and is embodied as a touch screen~~(9)~~, and a second part ~~(5)~~ of the housing which essentially covers the touch screen in a first operating position and essentially exposes it in a second operating position, and which has additional input ~~means (23)~~ parts, the second part of the housing accommodating a telephone receiver ~~(21)~~ in such a way that ~~said~~ the receiver is situated over the touch screen ~~(9)~~ in the first operating position.

~~(Fig. 2)~~

2/pats

Description

Portable telephone

The invention relates to a portable telephone according to the preamble of claim 1.

For inputting call numbers and for controlling specific additional functions, a telephone usually has a numerical keypad with a small number of supplementary keys. Convenient fixed-network telephones are often also equipped with a larger number of supplementary keys for controlling added-feature functions. In the case of portable telephones, the provision of a large number of input keys is impossible precisely because of the aimed-at minimization of the volume so that in such telephones it is known to perform alphanumeric inputting and to implement a wide variety of functions by multiple assignment of the numerical keys and menu prompting controlled by a small number of supplementary keys.

Touch-sensitive displays, what are referred to as touch screens, in which the user makes an input by applying point pressure to the surface which serves simultaneously as a display field and input field, have also been known for a long time. In higher quality designs, such touch screens permit inputs to be made by handwriting. They have come to be a widespread display and input device for relatively complex hand-held electronic devices, for example for organizers, PDAs or hand-held PCs.

Touch screens are costly and mechanically sensitive components which require mechanical protection in the unused state - in particular in view of their high cost which makes up a considerable portion of the price of

organizers or PDAs etc. This protective function is usually performed by covers which are

slid or folded over the touch screen. These covers generally prevent the touch screen, and thus the device, from being used in the protected state. In another widespread design, organizers or hand-held PCs comprise two part housings, one of which is fitted with an input keypad on its surface and the other with a display, and in the closed state the display and input keypad are situated one over the other, protected in the interior of the closed housing.

The development of the mobile telephone sector into a mass market has also seen the development of combination devices which advantageously combine the functions of a mobile telephone and those of an organizer or PDA. Such combination devices are usually composed of two part housings which are connected to one another in a foldable fashion by means of hinge. Such devices, which can be referred to as multi-function mobile telephones, are designed in one embodiment as a folding housing of the type of the abovementioned organizers or PDA with a conventional input keypad and conventional LCD display. In a further known embodiment, such mobile telephones have a touch screen onto which a telephone keypad is folded in the function as a mobile telephone, while this keypad is folded away in the organizer function and exposes the entire touch screen. This enables the entire organizer or PDA functionality to be used. In telephone mode, the cover also exposes part of the touch screen, providing a reduced display for operating the telephone. In this case, a different display mode from that of the organizer function ("portrait" representation instead of "landscape" representation) is of course selected.

The known portable telephones of this type are still extremely bulky, which is due, inter alia, to the fact that an appropriate and convenient organizer function requires a certain

size of the touch screen and in addition it is still necessary to accommodate further, in some cases relatively large, input elements and output elements on the surface of the device.

The invention is therefore based on the object of disclosing an improved portable telephone which constitutes the implementation of a relatively large touch screen with minimal housing dimensions.

The object is achieved by means of a portable telephone having the features of claim 1.

The invention comprises the essential idea of reserving that surface of the device which holds the touch screen as far as possible solely for the touch screen and of refraining from accommodating any other functional components on said surface. This permits the housing to be shortened.

In one preferred embodiment, the customary user behavior is appealed to in particular by the fact that the input means for the telephone mode are embodied as a conventional mobile phone keypad. In a first embodiment of such a keypad, the keys on the reverse side, facing the touch screen, of the second part of the housing which is fitted with the keypad each have a pressure pin. A suitable embodiment, known per se, of the keys with what are referred to as "snap-action disks" or similar means can, in addition to the familiar external appearance of a mobile phone keypad, also provide comparable activation feedback. In another embodiment, the input keypad is an independent mobile phone keypad which is completely separate from the touch screen. Said keypad can be designed in the way which is customary with mobile telephones or, in order to make the overall size as small as possible, it can be provided with a film keypad or similarly flat keypad.

In an alternative embodiment, which is even easier and more cost-effective to implement, the input means are formed by recesses in the second part of the housing (which has essentially only the function of a cover here) in conjunction with input fields represented on the touch screen. A keypad is, as it were, "simulated" by the interaction of recesses and touch screen input fields. The advantage of great simplicity is however compromised in this embodiment by certain ergonomic disadvantages.

In a preferred mechanical embodiment - which is known per se - the two parts of the housing are connected to one another by a hinge and can be pivoted with respect to one another. The second part of the housing essentially entirely exposes the touch screen in a first pivoted position, and essentially completely covers it in a second pivoted position (in which the telephone mode is implemented).

In an alternative embodiment to the above, the two parts of the housing are connected to one another in a displaceable fashion by means of respective guides, and here also the touch screen is entirely exposed in a first position, the organizer/PDA operating position, and covered in a second position, the telephone operating position.

In both embodiments, the second part of the housing has a window through which the part of the touch screen which is essential for a telephone mode can be viewed, but which, together with the other regions of the second part of the housing, covers the entire surface of the sensitive touch screen and protects it against damage. In one particularly simple embodiment, this window can, however, also be omitted and a simple housing cutout provided in its place.

The proposed device advantageously has an input function change-over switch which is actuated when the two parts of the housing move relative to one another and brings about a change-over between a touch screen input mode (organizer/PDA mode) and a keypad input mode (telephone mode), part of the touch screen being switched in a special way as a telephone display in the latter mode.

In one appropriate embodiment of the housing shells, a recess for holding an input pin for activating the touch screen is advantageously provided on its side, where said pin is always to hand, preferably attached in a captive fashion.

Advantages and expediencies of the invention also emerge from the subclaims and the following description of a preferred exemplary embodiment with reference to the figures, of which:

figure 1 shows an oblique view of a mobile telephone according to an embodiment of the invention with a closed housing, and
figure 2 shows an oblique view of the mobile telephone shown in figure 1 with the housing opened and the touch screen exposed.

Figures 1 and 2 show a perspective view of a mobile telephone 1 with the supplementary functionality of a palmtop. The mobile telephone 1 comprises a first housing part 3 and a second housing part 5, which are connected to one another in a pivotable fashion by means of a two-part folding hinge 7a, 7b on one longitudinal side.

A touch screen 9 which occupies virtually the entire surface is provided on the upper side of the first housing part 3 as an input and display device of the

mobile telephone in the palmtop operating mode. In one side face 3a of the first housing part 3, a recess 11 for a ballpoint pen

13, which serves as an input pin for the touch screen 9, is provided. Furthermore, the first housing part is fitted with an antenna 15 and has a connecting bushing 17 for a data line. A microphone (a telephone transmitter) 19 is positioned on the lower end face 3b of the first housing part 3.

The upper side of the second housing part can be seen in figure 1 and its lower side - in the folded-open state of the mobile telephone 1 - can be seen in figure 2. In figure 1, it is apparent that a telephone receiver 21 and an input keypad 23 for implementing the telephone functions are accommodated in the second housing part 5. A display window 25 is provided between the telephone receiver 21 and the input keypad 23 (in the arrangement which is customary per se in mobile telephones), said display window 25 exposing a section 9a of the touch screen 9 to the user's view even when a housing of the mobile telephone 1 is closed. The input keypad 23 is - as is apparent from figure 2 - embodied on its underside facing the surface of the touch screen 9 as a mechanical key array 23' by means of which pressure is exerted on a specific region of the touch screen 9 when a key is actuated, and a numerical input or a function in the telephone mode is triggered. For this purpose, for example a blunt plastic or hard-rubber pressure pin 23.1 can be connected to each key and the key can be prestressed in an upward direction by a spring element.

In the closed state of the mobile telephone 1, the touch screen 9 is actuated in the telephone mode in such a way that the configuration of the pressure pin array 23' of the input keypad 23 is assigned an input mask using the mobile telephone MMI (Man-Machine Interface) of a conventional mobile telephone.

In the opened state shown in figure 2, a

PC user interface is activated, a respective start menu being firstly called when the cover is opened. In order to change over between the operating modes, a change-over switch 27 which is embodied as a key button is provided on the underside of the second housing part 5, which key button can, of course, be used to change over the display and the input mode of the touch screen at the same time as the change-over of the mode of operation. In order to connect the telephone receiver 21 and the change-over switch 27 to the printed circuit board of the mobile telephone, a line which runs within the folding hinge 7b and which leads out of the second part 5 of the housing into the first part 3 of the housing is provided.

The invention is not restricted to the exemplary embodiment described but rather is also possible in a multiplicity of refinements within the scope of activity by a person skilled in the art. In particular, refinements in terms of the specific arrangement of the telephone transmitter and telephone receiver are possible, the arrangement of the relatively bulky telephone receiver in the second housing part covering a section of the touch screen constituting an essential feature of the invention. It permits, in particular, the telephone housing to be shortened, corresponding to an important desire on the part of customers.

A recess for an input pin can also be provided at another location, for example in the base region of the first housing part or else on the second housing part; however, it can also be dispensed with.

Instead of the mobile telephone described above, a cordless telephone with expanded functionality may also be embodied in the way explained in order to provide a display and input screen which is as large as possible in area for the supplementary function (database,

pocket translator, organizer or the like) with minimum housing dimensions.

Patent Claims

1. A portable telephone, in particular mobile telephone (1) or cordless telephone, having a display and input device which is arranged on a surface of a first part (3) of the housing and is embodied as a touch screen (9), and a second part (5) of the housing which essentially covers the touch screen in a first operating position of the portable telephone and essentially exposes it in a second operating position, and which has additional input means (23), characterized in that the second part of the housing accommodates a telephone receiver (21) in such a way that said receiver is situated over the touch screen (9) in the first operating position.

2. The portable telephone as claimed in claim 1, characterized in that the touch screen (9) essentially occupies an entire surface of the first part (3) of the housing.

3. The portable telephone as claimed in claim 1 or 2, characterized in that the additional input means (23) are embodied as a mechanical keypad, in each case a pressure pin (23.1) via which point pressure is exerted on a predetermined region of the touch screen being assigned to the keys on the reverse side facing the touch screen (9).

4. The portable telephone as claimed in claim 1 or 2, characterized in that the input means are formed by recesses in the second part (5) of the housing in conjunction with input fields which are represented on the touch screen (9) and which together form an input mask for the touch screen in a predetermined telephone input mode.

5. The portable telephone as claimed in claim 1 or 2, characterized in that the additional input means are embodied as an input keypad which is independent of the touch screen (9).

6. The portable telephone as claimed in one of the preceding claims, characterized in that the second part of the housing with the additional input means is designed to be displaceable with respect to the first part of the housing with the touch screen, in such a way that it essentially entirely exposes the touch screen in a first displaced position and essentially entirely covers it in a second displaced position.

7. The portable telephone as claimed in one of claims 1 to 5, characterized in that the second part (5) of the housing with the additional input means (23) is designed to be pivotable with respect to the first part (3) of the housing, in such a way that it essentially entirely exposes the touch screen (9) in a first pivoted position (fig. 2) and essentially entirely covers it in a second pivoted position (fig. 1).

8. The portable telephone as claimed in one of the preceding claims, characterized in that the second part (5) of the housing has a window region (25) which covers in a transparent fashion a section (9a) of the touch screen (9) in the first operating position.

9. The portable telephone as claimed in one of the preceding claims, characterized by a change-over switch (27) which is actuated in particular in the case of displacement or folding of the second part (5) of the housing with respect to the first part (3) of the housing and brings about a change-over between a touch screen input mode and an input

means input mode as well as a change-over of display functions.

10. The portable telephone as claimed in one of the preceding claims, characterized by a recess (11) for holding an input pin (13), in particular in a side face of the first or second part (3, 5) of the housing.

GR 99 P 2683

Abstract

Portable telephone

Portable telephone, in particular mobile telephone (1) or cordless telephone, having a display and input device which is arranged on a surface of a first part (3) of the housing and is embodied as a touch screen (9), and a second part (5) of the housing which essentially covers the touch screen in a first operating position and essentially exposes it in a second operating position, and which has additional input means (23), the second part of the housing accommodating a telephone receiver (21) in such a way that said receiver is situated over the touch screen (9) in the first operating position.

(Fig. 2)

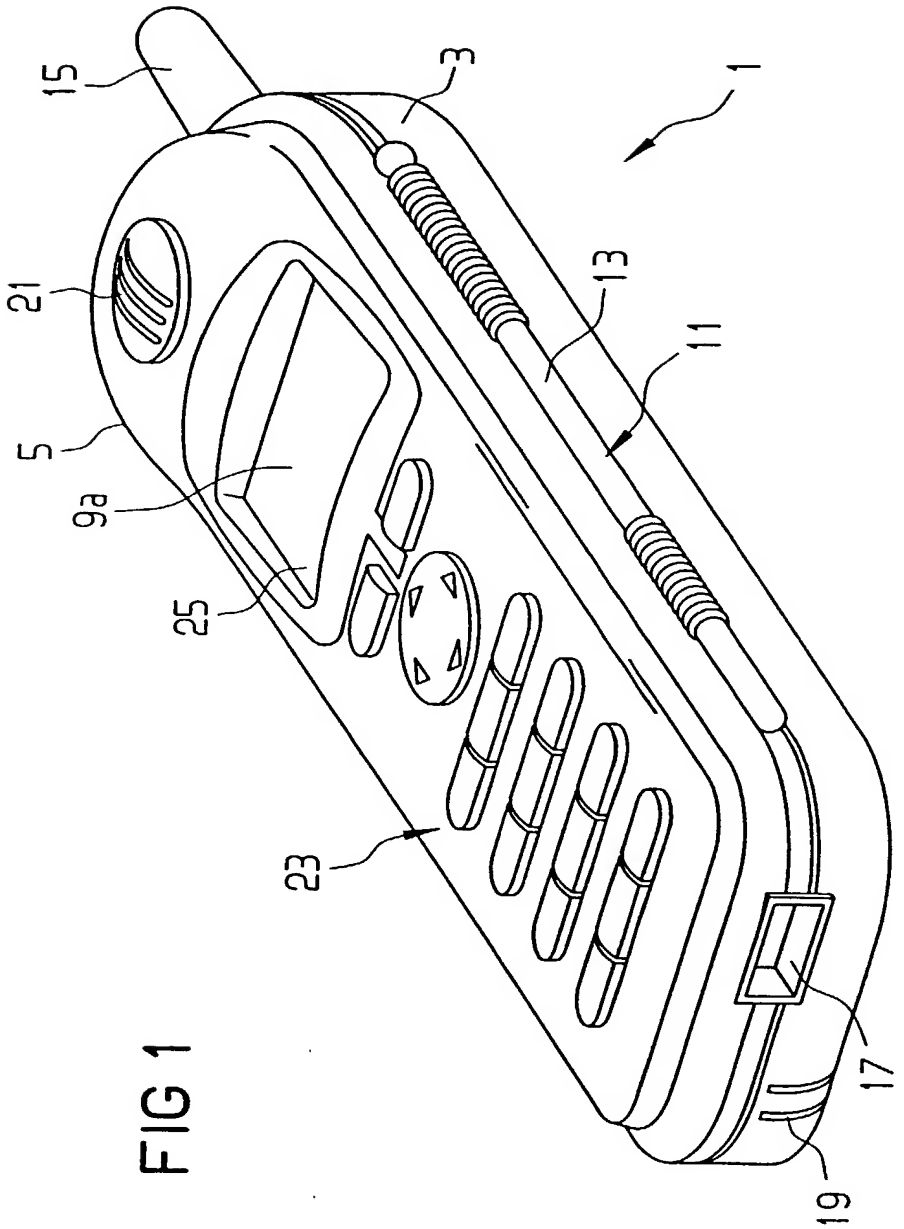

FIG 1

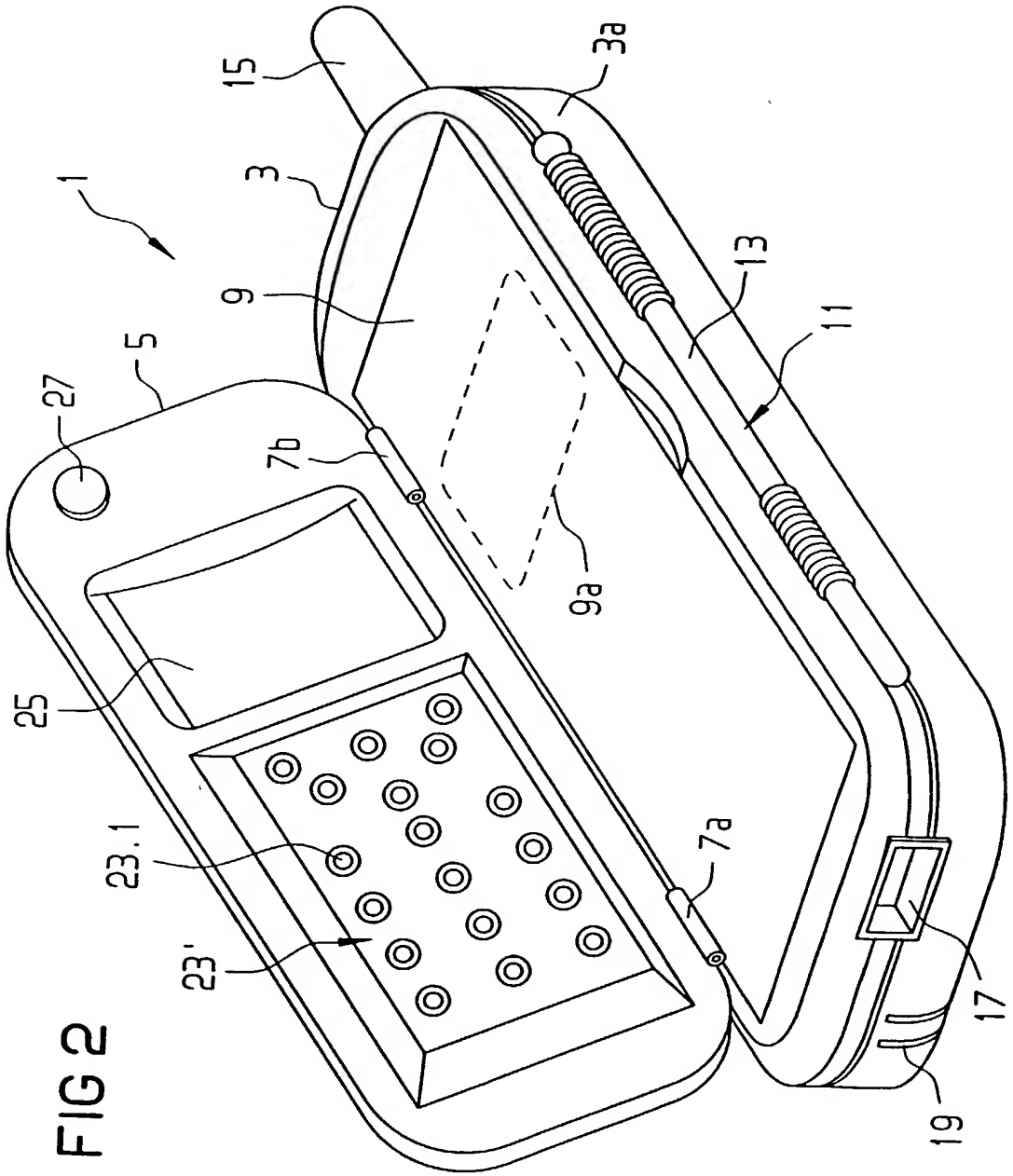

FIG 2

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Tragbares Telefon

Portable Telephone

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)
☐ hier beigefügt ist.
☒ am 12 04 2000 als
PCT internationale Anmeldung
PCT Anmeldungsnummer PCT/DE00/01125
eingereicht wurde und am _____
abgeändert wurde (falls tatsächlich abgeändert).

(check one)
☐ is attached hereto.
☒ was filed on 12.04.2000 as
PCT international application
PCT Application No. PCT/DE00/01125
and was amended on _____
(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign appplications
Priorität beansprucht

			Priority Claimed	
19940826.2	DE	27.08.1999	☒	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein
			☐	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein
			☐	☐
(Number) (Nummer)	(Country) (Land)	(Day Month Year Filed) (Tag Monat Jahr eingereicht)	Yes Ja	No Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemass Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code. §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application

PCT/DE00/01125 (Application Serial No.) (Anmeldeseriennummer)	12.04.2000 (Filing Date D, M, Y) (Anmeldedatum T, M, J)	anhängig (Status) (patentiert, anhängig, aufgegeben)	pending (Status) (patented, pending, abandoned)
_____ (Application Serial No.) (Anmeldeseriennummer)	(Filing Date D,M,Y) (Anmeldedatum T, M; J)	_____ (Status) (patentiert, anhängig, aufgeben)	(Status) (patented, pending, abandoned)

Ich erklare hiermit, dass alle von mir in der vorliegenden Erklarung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklarung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gultigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwalte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: *(Name und Registrationsnummer anführen)*

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

29177
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(Supply similar information and signature for third and subsequent joint inventors)

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Unterschrift des Erfinders Datum 27.2.02	Inventor's signature Date
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Staatsangehörigkeit	Citizenship
DE	DE
Postanschrift	Post Office Address
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82166 GRAEFELFING	82166 GRAEFELFING
Voller Name des vierten Miterfinders:	Full name of fourth joint inventor.
MARIO TOPEL	MARIO TOPEL
Unterschrift des Erfinders Datum 28/02/02	Inventor's signature Date
Wohnsitz	Residence
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Staatsangehorigkeit	Citizenship
DE	DE
Postanschrift	Post Office Address
THERESIENWEG 30	THERESIENWEG 30
85551 KIRCHHEIM	85551 KIRCHHEIM
Voller Name des fünften Miterfinders:	Full name of fifth joint inventor.
Unterschrift des Erfinders Datum	Inventor's signature Date
Wohnsitz ,	Residence ,
Staatsangehorigkeit	Citizenship
Postanschrift	Post Office Address
Voller Name des sechsten Miterfinders:	Full name of sixth joint inventor:
Unterschrift des Erfinders Datum	Inventor's signature Date
Wohnsitz ,	Residence ,
Staatsangehörigkeit	Citizenship
Postanschrift	Post Office Address

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).